

- a transmitter operable to transmit the m-level VSB modulated signal and the n-level VSB modulated signal;

said receiving apparatus comprising:

- a demodulator operable to demodulate the m-level VSB modulated signal to the first data stream and demodulate the n-level VSB modulated signal to a demodulated data stream,

wherein the demodulated data stream is reproduced according to the information representing the value of n; and

- a de-interleaver operable to de-interleave the demodulated data stream to the second data stream.

7. (Amended) A signal transmission apparatus for transmitting a VSB modulated signal having information of a first data stream and a second data stream, the apparatus comprising:

- an interleaver operable to interleave the second data stream to produce an interleaved data stream;

- a modulator operable to modulate the first data stream, without being interleaved, to an m-level VSB modulated signal and modulate the interleaved data stream to an n-level VSB modulated signal, n being an integer larger than m,

wherein the first data stream includes information representing the value of n; and

- a transmitter operable to transmit the m-level VSB modulated signal and the n-level VSB modulated signal.

8. (Amended) A signal receiving apparatus comprising:

- a receiver operable to receive a transmitted VSB modulated signal,

wherein said transmitted VSB modulated signal includes an m-level VSB modulated signal and an n-level VSB modulated signal, n being an integer larger than m;

- a demodulator operable to demodulate the m-level VSB modulated signal to a first data stream, which is a non-interleaved data stream including information representing the value of n, and

demodulate the n-level VSB modulated signal to a demodulated data stream, which is an interleaved data stream,

wherein the demodulated data stream is reproduced according to the information representing the value of n; and

- a de-interleaver operable to de-interleave the demodulated data stream to a second data stream.

9. (Amended) A signal transmission and receiving method for transmitting and receiving a VSB modulated signal having information of a first data stream and a second data stream, the method comprising a transmission method and a receiving method,

said transmission method comprising:

- interleaving the second data stream to produce an interleaved data stream,

- modulating the first data stream, without being interleaved, to an m-level VSB modulated signal and modulating the interleaved data stream to an n-level VSB modulated signal, n being an integer larger than m,

wherein the first data stream includes information representing the value of n; and

- transmitting the m-level VSB modulated signal and the n-level VSB modulated signal;

said receiving method comprising:

- demodulating the m-level VSB modulated signal to the first data stream and demodulating the n-level VSB modulated signal to a demodulated data stream,

wherein the demodulated data stream is reproduced according to the information representing the value of n; and

- de-interleaving the demodulated data stream to the second data stream.

10. (Amended) A signal transmission method for transmitting a VSB modulated signal having information of a first data stream and a second data stream, the method comprising:

- interleaving the second data stream to produce an interleaved data stream;

- modulating the first data stream, without being interleaved, to an m-level VSB modulated signal and modulating the interleaved data stream to an n-level VSB modulated signal, n being an integer larger than m,

wherein the first data stream includes information representing the value of n; and

- transmitting the m-level VSB modulated signal and the n-level VSB modulated signal.

11. (Amended) A signal receiving method comprising:

- receiving a transmitted VSB modulated signal,

wherein said transmitted VSB modulated signal includes an m-level VSB modulated signal and an n-level VSB modulated signal, n being an integer larger than m;

- demodulating the m-level VSB modulated signal to a first data stream, which is a non-interleaved data stream including information representing the value of n, and demodulating the n-level VSB modulated signal to a demodulated data stream, which is an interleaved data stream,

wherein the demodulated data stream is reproduced according to the information representing the value of n; and

- de-interleaving the demodulated data stream to a second data stream.

**Please add new claims 12-29 as follows.**

12. A signal transmission and receiving apparatus for transmitting and receiving a VSB modulated signal having information of a first data stream and a second data stream, the apparatus comprising a transmission apparatus and a receiving apparatus,

said transmission apparatus comprising:

- an interleaver operable to interleave the second data stream to produce an interleaved data stream;

- a modulator operable to modulate the first data stream, without being interleaved, to an m-level VSB modulated signal and modulate the interleaved data stream to an n-level VSB modulated signal, n being an integer larger than m,

wherein the first data stream includes information representing a modulation scheme; and

- a transmitter operable to transmit the m-level VSB modulated signal and the n-level VSB modulated signal;

said receiving apparatus comprising:

- a demodulator operable to demodulate the m-level VSB modulated signal to the first data stream and demodulate the n-level VSB modulated signal to a demodulated data stream,

wherein the demodulated data stream is reproduced according to the information representing the modulation scheme; and

- a de-interleaver operable to de-interleave the demodulated data stream to the second data stream.

13. A signal transmission apparatus for transmitting a VSB modulated signal having information of a first data stream and a second data stream, the apparatus comprising:

- an interleaver operable to interleave the second data stream to produce an interleaved data stream;

- a modulator operable to modulate the first data stream, without being interleaved, to an m-level VSB modulated signal and modulate the interleaved data stream to an n-level VSB modulated signal, n being an integer larger than m,

wherein the first data stream includes information representing a modulation scheme; and

- a transmitter operable to transmit the m-level VSB modulated signal and the n-level VSB modulated signal.

14. A signal receiving apparatus comprising:

- a receiver operable to receive a transmitted VSB modulated signal,

wherein said transmitted VSB modulated signal includes an m-level VSB modulated signal and an n-level VSB modulated signal, n being an integer larger than m;

- a demodulator operable to demodulate the m-level VSB modulated signal to a first data stream, which is a non-interleaved data stream including information representing a modulation

scheme, and demodulate the n-level VSB modulated signal to a demodulated data stream, which is an interleaved data stream,

\_\_\_\_\_ wherein the demodulated data stream is reproduced according to the information representing the modulation scheme; and

\_\_\_\_\_ - a de-interleaver operable to de-interleave the demodulated data stream to a second data stream.

15. A signal transmission and receiving method for transmitting and receiving a VSB modulated signal having information of a first data stream and a second data stream, the method comprising a transmission method and a receiving method,

\_\_\_\_\_ said transmission method comprising:

\_\_\_\_\_ - interleaving the second data stream to produce an interleaved data stream,

\_\_\_\_\_ - modulating the first data stream, without being interleaved, to an m-level VSB modulated signal and modulating the interleaved data stream to an n-level VSB modulated signal, n being an integer larger than m,

\_\_\_\_\_ wherein the first data stream includes information representing a modulation scheme; and

\_\_\_\_\_ - transmitting the m-level VSB modulated signal and the n-level VSB modulated signal;

\_\_\_\_\_ said receiving method comprising:

\_\_\_\_\_ - demodulating the m-level VSB modulated signal to the first data stream and demodulating the n-level VSB modulated signal to a demodulated data stream,

\_\_\_\_\_ wherein the demodulated data stream is reproduced according to the information representing the modulation scheme; and

\_\_\_\_\_ - de-interleaving the demodulated data stream to the second data stream.

16. A signal transmission method for transmitting a VSB modulated signal having information of a first data stream and a second data stream, the method comprising:

\_\_\_\_\_ - interleaving the second data stream to produce an interleaved data stream;

- modulating the first data stream, without being interleaved, to an m-level VSB modulated signal and modulating the interleaved data stream to an n-level VSB modulated signal, n being an integer larger than m,

wherein the first data stream includes information representing a modulation scheme; and

- transmitting the m-level VSB modulated signal and the n-level VSB modulated signal.

17. A signal receiving method comprising:

- receiving a transmitted VSB modulated signal,

wherein said transmitted VSB modulated signal includes an m-level VSB modulated signal and an n-level VSB modulated signal, n being an integer larger than m;

- demodulating the m-level VSB modulated signal to a first data stream, which is a non-interleaved data stream including information representing a modulation scheme, and demodulating the n-level VSB modulated signal to a demodulated data stream, which is an interleaved data stream,

wherein the demodulated data stream is reproduced according to the information representing the modulation scheme; and

- de-interleaving the demodulated data stream to a second data stream.

18. A signal transmission and receiving apparatus for transmitting and receiving a QAM or PSK modulated signal having information of a first data stream and a second data stream, the apparatus comprising a transmission apparatus and a receiving apparatus,

said transmission apparatus comprising:

- an interleaver operable to interleave the second data stream to produce an interleaved data stream;

- a modulator operable to modulate the first data stream, without being interleaved, to an m-level QAM or PSK modulated signal and modulate the interleaved data stream to an n-level QAM or PSK modulated signal,

wherein the first data stream includes information representing the value of n; and

- a transmitter operable to transmit the m-level QAM or PSK modulated signal and the n-level QAM or PSK modulated signal;

said receiving apparatus comprising:

- a demodulator operable to demodulate the m-level QAM or PSK modulated signal to the first data stream and demodulate the n-level QAM or PSK modulated signal to a demodulated data stream,

wherein the demodulated data stream is reproduced according to the information representing the value of n; and

- a de-interleaver operable to de-interleave the demodulated data stream to the second data stream.

19. A signal transmission apparatus for transmitting a QAM or PSK modulated signal having information of a first data stream and a second data stream, the apparatus comprising:

- an interleaver operable to interleave the second data stream to produce an interleaved data stream;

- a modulator operable to modulate the first data stream, without being interleaved, to an m-level QAM or PSK modulated signal and modulate the interleaved data stream to an n-level QAM or PSK modulated signal,

wherein the first data stream includes information representing the value of n; and

- a transmitter operable to transmit the m-level QAM or PSK modulated signal and the n-level QAM or PSK modulated signal.

20. A signal receiving apparatus comprising:

- a receiver operable to receive a transmitted QAM or PSK modulated signal,

wherein said transmitted QAM or PSK modulated signal includes an m-level QAM or PSK modulated signal and an n-level QAM or PSK modulated signal;

- a demodulator operable to demodulate the m-level QAM or PSK modulated signal to a first data stream, which is a non-interleaved data stream including information representing the value of

n, and demodulate the n-level QAM or PSK modulated signal to a demodulated data stream, which is an interleaved data stream,

wherein the demodulated data stream is reproduced according to the information representing the value of n; and

- a de-interleaver operable to de-interleave the demodulated data stream to a second data stream.

21. A signal transmission and receiving method for transmitting and receiving a QAM or PSK modulated signal having information of a first data stream and a second data stream, the method comprising a transmission method and a receiving method,

said transmission method comprising:

- interleaving the second data stream to produce an interleaved data stream,

- modulating the first data stream, without being interleaved, to an m-level QAM or PSK modulated signal and modulating the interleaved data stream to an n-level QAM or PSK modulated signal,

wherein the first data stream includes information representing the value of n; and

- transmitting the m-level QAM or PSK modulated signal and the n-level QAM or PSK modulated signal;

said receiving method comprising:

- demodulating the m-level QAM or PSK modulated signal to the first data stream and demodulating the n-level QAM or PSK modulated signal to a demodulated data stream,

wherein the demodulated data stream is reproduced according to the information representing the value of n; and

- de-interleaving the demodulated data stream to the second data stream.

22. A signal transmission method for transmitting a QAM or PSK modulated signal having information of a first data stream and a second data stream, the method comprising:

- interleaving the second data stream to produce an interleaved data stream;



\_\_\_\_\_ - modulating the first data stream, without being interleaved, to an m-level QAM or PSK modulated signal and modulating the interleaved data stream to an n-level QAM or PSK modulated signal,

\_\_\_\_\_ wherein the first data stream includes information representing the value of n; and

\_\_\_\_\_ - transmitting the m-level QAM or PSK modulated signal and the n-level QAM or PSK modulated signal.

23. A signal receiving method comprising:

\_\_\_\_\_ - receiving a transmitted QAM or PSK modulated signal,

\_\_\_\_\_ wherein said transmitted QAM or PSK modulated signal includes an m-level QAM or PSK modulated signal and an n-level QAM or PSK modulated signal;

\_\_\_\_\_ - demodulating the m-level QAM or PSK modulated signal to a first data stream, which is a non-interleaved data stream including information representing the value of n, and demodulating the n-level QAM or PSK modulated signal to a demodulated data stream, which is an interleaved data stream,

\_\_\_\_\_ wherein the demodulated data stream is reproduced according to the information representing the value of n; and

\_\_\_\_\_ - de-interleaving the demodulated data stream to a second data stream.

24. A signal transmission and receiving apparatus for transmitting and receiving a QAM or PSK modulated signal having information of a first data stream and a second data stream, the apparatus comprising a transmission apparatus and a receiving apparatus,

\_\_\_\_\_ said transmission apparatus comprising:

\_\_\_\_\_ - an interleaver operable to interleave the second data stream to produce an interleaved data stream;

\_\_\_\_\_ - a modulator operable to modulate the first data stream, without being interleaved, to an m-level QAM or PSK modulated signal and modulate the interleaved data stream to an n-level QAM or PSK modulated signal,

wherein the first data stream includes information representing a modulation scheme; and  
- a transmitter operable to transmit the m-level QAM or PSK modulated signal and the n-  
level QAM or PSK modulated signal;

said receiving apparatus comprising:  
- a demodulator operable to demodulate the m-level QAM or PSK modulated signal to the  
first data stream and demodulate the n-level QAM or PSK modulated signal to a demodulated data  
stream,

wherein the demodulated data stream is reproduced according to the information representing  
the modulation scheme; and

- a de-interleaver operable to de-interleave the demodulated data stream to the second data  
stream.

25. A signal transmission apparatus for transmitting a QAM or PSK modulated signal having  
information of a first data stream and a second data stream, the apparatus comprising:

- an interleaver operable to interleave the second data stream to produce an interleaved data  
stream;

- a modulator operable to modulate the first data stream, without being interleaved, to an  
m-level QAM or PSK modulated signal and modulate the interleaved data stream to an n-level QAM  
or PSK modulated signal,

wherein the first data stream includes information representing a modulation scheme; and

- a transmitter operable to transmit the m-level QAM or PSK modulated signal and the n-  
level QAM or PSK modulated signal.

26. A signal receiving apparatus comprising:

- a receiver operable to receive a transmitted QAM or PSK modulated signal,

wherein said transmitted QAM or PSK modulated signal includes an m-level QAM or PSK  
modulated signal and an n-level QAM or PSK modulated signal;

- a demodulator operable to demodulate the m-level QAM or PSK modulated signal to a first data stream, which is a non-interleaved data stream including information representing a modulation scheme, and demodulate the n-level QAM or PSK modulated signal to a demodulated data stream, which is an interleaved data stream,

wherein the demodulated data stream is reproduced according to the information representing the modulation scheme; and

- a de-interleaver operable to de-interleave the demodulated data stream to a second data stream.

27. A signal transmission and receiving method for transmitting and receiving a QAM or PSK modulated signal having information of a first data stream and a second data stream, the method comprising a transmission method and a receiving method,

said transmission method comprising:

- interleaving the second data stream to produce an interleaved data stream,

- modulating the first data stream, without being interleaved, to an m-level QAM or PSK modulated signal and modulating the interleaved data stream to an n-level QAM or PSK modulated signal,

wherein the first data stream includes information representing a modulation scheme; and

- transmitting the m-level QAM or PSK modulated signal and the n-level QAM or PSK modulated signal;

said receiving method comprising:

- demodulating the m-level QAM or PSK modulated signal to the first data stream and demodulating the n-level QAM or PSK modulated signal to a demodulated data stream,

wherein the demodulated data stream is reproduced according to the information representing the modulation scheme; and

- de-interleaving the demodulated data stream to the second data stream.

28. A signal transmission method for transmitting a QAM or PSK modulated signal having information of a first data stream and a second data stream, the method comprising:

- interleaving the second data stream to produce an interleaved data stream;  
- modulating the first data stream, without being interleaved, to an m-level QAM or PSK modulated signal and modulating the interleaved data stream to an n-level QAM or PSK modulated signal,

wherein the first data stream includes information representing a modulation scheme; and

- transmitting the m-level QAM or PSK modulated signal and the n-level QAM or PSK modulated signal.

29. A signal receiving method comprising:

- receiving a transmitted QAM or PSK modulated signal,

wherein said transmitted QAM or PSK modulated signal includes an m-level QAM or PSK modulated signal and an n-level QAM or PSK modulated signal;

- demodulating the m-level QAM or PSK modulated signal to a first data stream, which is a non-interleaved data stream including information representing a modulation scheme, and demodulating the n-level QAM or PSK modulated signal to a demodulated data stream, which is an interleaved data stream,

wherein the demodulated data stream is reproduced according to the information representing the modulation scheme; and

- de-interleaving the demodulated data stream to a second data stream.